

Amendments to the Claims:

The following list of claims replaces all prior listings of claims in the application:

1. (Currently Amended) A method of analyzing video frames capturing a 3D scene over time to automatically generate a road map of the 3D scene comprising:

detecting positions of objects in the video frames;

estimating 3D transformation parameters for the objects;

predicting heights of the objects based at least in part on the 3D transformation parameters;

removing outliers from the predicted heights of objects to produce a filtered set of objects;

using the filtered set of objects to repeat estimating the 3D transformation parameters and to repeat predicting the heights of the objects;

estimating road boundaries of the 3D scene using a background image and the positions of the objects by filling a uniform color region starting from a foot of a position of an object of the objects and stopping when an edge pixel of the background image is reached;

generating the road map;

removing outlier pixels from the road map; and

estimating a height map for objects moving on a road of the road map.

2. – 3. (Canceled)

4. (Original) The method of claim 1, wherein detecting positions of objects comprises applying a foreground object detection process to the video frames.

5. (Canceled)

6. (Original) The method of claim 1, wherein estimating road boundaries comprises applying a region growing process to object positions to find pixels of the video frames belonging to a road surface in the 3D scene.

7. (Currently Amended) An article comprising: a tangible computer-readable storage medium containing instructions, which when executed, result in analyzing video frames capturing a 3D scene over time to automatically generate a road map of the 3D scene by

- detecting positions of objects in the video frames;
- estimating 3D transformation parameters for the objects;
- predicting heights of the objects based at least in part on the 3D transformation parameters;
- removing outliers from the predicted heights of objects to produce a filtered set of objects;
- using the filtered set of objects to repeat estimating the 3D transformation parameters and to repeat predicting the heights of the objects;
- estimating road boundaries of the 3D scene using a background image and the positions of the objects by filling a uniform color region starting from a foot of a position of an object of the objects and stopping when an edge pixel of the background image is reached;
- generating the road map;
- removing outlier pixels from the road map; and
- estimating a height map for objects moving on a road of the road map.

8. – 9. (Canceled).

10. (Original) The article of claim 7, wherein instructions for detecting positions of objects comprises instructions for applying a foreground object detection process to the video frames.

11. (Canceled).

12. (Original) The article of claim 7, wherein instructions for estimating road boundaries comprises instructions for applying a region growing process to object positions to find pixels of the video frames belonging to a road surface in the 3D scene.

13. (Currently Amended) A system comprising:
a foreground object detection unit to analyze video frames of a 3D scene and detect objects and object positions in the video frames;
an object scale prediction unit to estimate 3D transformation parameters for the objects, to predict heights of the objects based at least in part on the 3D transformation parameters, to remove outliers from the predicted heights of objects to produce a filtered set of objects, and to use the filtered set of objects to repeat estimating the 3D transformation parameters and to repeat predicting the heights of the objects; and
a road map detection unit to generate the road map by estimating road boundaries of the 3D scene using the object positions and a background image by filling a uniform color region starting from a foot of a position of an object of the objects and stopping when an edge pixel of the background image is reached, removing outlier pixels from the road map, and estimating a height map for objects moving on a road of the road map.

14. – 16. (Canceled).

17. (Previously Presented) The system of claim 13, wherein the road map detection unit estimates road boundaries by applying a region growing process to object positions to find pixels of the video frames belonging to a road surface in the 3D scene.

18. (Previously Presented) The method of claim 1, wherein the objects comprise a representation of a human being in the video frames.

19. (Canceled).

20. (Previously Presented) The article of claim 7, wherein the objects comprise a representation of a human being in the video frames.

21. (Canceled).

22. (Previously Presented) The system of claim 13, wherein

the objects comprise a representation of a human being in the video frames.

23. (Canceled).